

REMARKS/ARGUMENTS

Claims 39-76 are pending in this application, with claims 39, 44 and 67 being the only independent claims. Claim 44 has been rewritten as an independent claim. Reconsideration of the above-identified application, as herein amended and in view of the following remarks, is respectfully requested.

Claims 39-54 and 65 stand rejected under 35 U.S.C. §103 as unpatentable over U.S. Patent No. 6,348,694 (Gersteyn) in view of U.S. Patent No. 6,436,127 (Anderson).

Claims 55-59 and 64 stand rejected under 35 U.S.C. §103 as unpatentable over Gersteyn and Anderson in view of U.S. Patent No. 5,807,261 (Benaron).

Claim 60 stands rejected under 35 U.S.C. §103 as unpatentable over Gersteyn and Anderson in view of U.S. Patent No. 6,736,832 (Lenderink).

Claim 61 stands rejected under 35 U.S.C. §103 as unpatentable over Gersteyn and Anderson in view of U.S. Patent Application Publication No. 2002/0052562 (Lipman).

Claims 62-63 stand rejected under 35 U.S.C. §103 as unpatentable over Gersteyn and Anderson in view of U.S. Patent No. 5,107,123 (Shi).

Claim 66 stands rejected under 35 U.S.C. §103 as unpatentable over Gersteyn and Anderson in view of U.S. Patent No. 4,882,598 (Wulf).

Claims 67-69, 71-72 and 75-76 stand rejected under 35 U.S.C. §103 as unpatentable over Anderson in view of Wulf.

Claim 70 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Anderson and Wulf in view of US Patent No. 5,640,957 (Kaminski).

Claims 73-74 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Anderson and Wulf in view of Gershteyn.

Before discussing the cited prior art and the Examiner's rejections of the claims in view of that art, a brief description of the subject matter described in the present application is deemed appropriate to facilitate understanding of the arguments for patentability. The description is not meant to argue unclaimed subject matter.

The present invention relates to measuring devices and a method for determining the allowable UV exposure time and/or UV radiation dose of human skin. According to the invention, allowable exposure time and/or radiation dose is based on UV radiation for which the reflection that occurs in and/or on the skin is not true reflection but rather diffuse reflection (see paragraphs [0065] - [0066] in the specification as filed). As shown in Fig. 2 of the present application, an incident ray 1 penetrates the skin 2 and is radially scattered and is partly diffusely reflected (as indicated by the rays of light 3) and partly absorbed (as indicated by the rays 4) (see paragraph [0066]). The density and/or thickness of the melanin granules and/or density and/or thickness of the layer of melanosomes embedded in keratinocytes can be derived from the rays 3 that represent the diffuse reflection to obtain information about the effectiveness of an area of hyperkeratosis, on the basis of which a threshold dose can be determined (see paragraph [0067]).

Independent claim 1 recites "an evaluation unit coupled to the UV emitter and the UV sensor for determining UV radiation absorption of the skin based on the UV radiation emitted on the skin by the UV emitter and the diffusely reflected UV radiation received by the UV sensor."

Gershteyn fails to disclose, teach or suggest this limitation. Gershteyn discloses a method and apparatus for determining an ability of skin to withstand exposure to harmful radiation, and a safe exposure time of the skin. According to Gershteyn, a first radiation 36 and a second radiation 38 are incident to a region of skin 24 (see Fig. 1A and col. 7, lines 3-5 of

Gershteyn). The first radiation 36 has a wavelength within an absorption spectrum of sunscreen 26 on the skin and the second radiation 38 has a wavelength outside the absorption spectrum of the sunscreen (col. 7, lines 33-39) to determine an effectiveness of the sunscreen (col. 7, lines 50-57). In a specific example, the first radiation is in the range 290nm-320nm (col. 11, lines 40-43) and the second radiation is in the range 400nm-760nm (col. 12, lines 10-12). Gershteyn also discloses that the reflected second radiation indicates a darkness of the skin 24 which is indicative of how susceptible the skin is to damage by harmful radiation (col. 7, lines 27-32). The Examiner acknowledges that Gershteyn fails to disclose that the UV radiation received by the UV sensor is diffusely reflected by the skin.

As discussed in more detail below, Anderson provides no fails to teach or suggest what Gershteyn lacks because the radiation detected by Anderson (1) is not UV radiation and (2) is used to determine a “redness” of the skin which indicates a position of psoriasis plaques and is not used to determine an allowable dose.

Anderson discloses a method and a device for delivering UV treatment of psoriasis or other skin disorders. Anderson further discloses a positioning system which determines the positions of the psoriasis (see col. 6, lines 44-47 of Anderson). Anderson discloses that a number of diagnostics may be used to determine the position of the plaques caused by psoriasis or other skin disorders (col. 7, lines 18-20). Accordingly, the diagnostic system of Anderson is used to determine where the UV treatment should be applied, and not an allowable dose.

Typically, a diagnostic is used that differentiates plaques from unaffected skin. For example, Anderson discloses that psoriasis produced plaques are redder than normal skin (col. 7, lines 22-26). In a specific embodiment, Anderson discloses that “redness” can be

measured as a ratio of diffuse reflectance from a selected area of skin and further discloses that visible or near-infrared light bands are used to irradiate the skin (see col. 7, lines 27-40). As further examples, Anderson discloses that infrared light (815nm and 900nm) may alternatively be used (col. 7, lines 47-50). Accordingly, Anderson does not disclose evaluating “diffusely reflected UV radiation received by the UV sensor”, as expressly recited in independent claim 39.

Furthermore, since this section of Anderson uses the reflectance to determine “redness” which indicates only a position of psoriasis produced plaques, there is no reason for one skilled in the art to use the reflectance of Anderson in the device of Gershteyn or any other device to determine how susceptible the skin is to damage by harmful radiation. Accordingly, the combination of Gershteyn and Anderson fails to disclose “an evaluation unit coupled to the UV emitter and the UV sensor for determining UV radiation absorption of the skin based on the UV radiation emitted on the skin by the UV emitter and the diffusely reflected UV radiation received by the UV sensor” as recited in independent claim 39.

Therefore, independent claim 39 is allowable over the combination of Gershteyn and Anderson and the rejection of claim 39 under 35 U.S.C. §103 should be withdrawn.

Independent claim 44 is similar to claim 39 and emphasizes that the reflection occurs below the application surface. Accordingly, independent claim 44 is allowable for the same reasons as is independent claim 39, as well as for the additional recitations contained therein.

Independent claim 67 discloses determining absorption of erythemally-effective UV radiation in a layer of the skin that has developed hyperkeratosis based on a degree of diffuse reflection of UV radiation in the layer of skin, the depth of the determination being adjusted for a determination in a specific skin layer” and “assigning a UV radiation threshold value to the determination of UV radiation absorption of the skin”.

As discussed above, Anderson fails to teach or suggest diffuse reflection of UV radiation. In contrast, Anderson discloses evaluating visible and near-infrared light reflections to determine a “redness” of skin. Furthermore, Anderson discloses that the “redness” indicates locations of the skin with psoriasis produced plaques. Accordingly, Anderson also fails to disclose “assigning a UV radiation threshold value to the determination of UV radiation absorption of the skin”, as expressly recited in independent claim 67.

Wulf discloses measuring electromagnetic radiation reflected from an individual’s skin surface to determine the individual’s ability to withstand exposure to UV radiation (col. 2, lines 12-33 of Wulf). Thus, the combination of Anderson and Wulf disclose that only the reflection from the skin surface of Wulf is used to determine the ability to withstand exposure. There is no reason to combine the technique for determining the location of a psoriasis plaque as disclosed by Anderson with the device of Wulf and *vice versa*.

Accordingly, independent claim 67 is allowable over the combination of Anderson and Wulf.

Dependent claims 40-43, 45-66 and 68-76 are allowable for same reasons as are the respective one of independent claims 39, 44, and 67, from which they depend, as well as for the additional recitations therein.

The application is now deemed to be in condition for allowance and notice to that effect is solicited.

It is believed that no additional fees or charges are required at this time in connection with the present application. However, if any additional fees or charges are required at this time, they may be charged to our Patent and Trademark Office Deposit Account No. 03-2412.

Respectfully submitted,
COHEN PONTANI LIEBERMAN & PAVANE LLP

By /Alfred W. Froebrich/
Alfred W. Froebrich
Reg. No. 38,887
551 Fifth Avenue, Suite 1210
New York, New York 10176
(212) 687-2770

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